

Date: Tuesday, 1/16/2007 11:28:26 AM
 User: Kim Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : TOW RING
 Job Number : 30274
 Estimate Number : 10396
 P.O. Number : N/A Part Number : D2968041
 This Issue : 1/16/2007 S.O. No. : N/A Drawing Number : D2968
 Prsht Rev. : NC Project Number : N/A
 First Issue : N/A Type : MACHINED PARTS Drawing Revision : B1
 Previous Run : 29836 Material : N/A
 Written By : Due Date : 1/30/2007 Qty: 40 Um: Each
 Checked & Approved By : JA 07.01.16
 Comment : Est: C 03.04.11 Reformat; Incorporated D2968-1/-5 KJ/RF

Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 30274A STEM



Comment: Sub-Component STEM
 D2968-1 B 30274 A

FC 07/02/26 40

2.0 30274B RING



Comment: Sub-Component RING
 D2968-5 B 29791 D

FC 07 02 26 40

3.0 LARGE FAB 1 LARGE FABRICATION RESOURCE 1



Comment: LARGE FABRICATION RESOURCE 1

Weld D2968-1 & D2968-5 as per Dwg D2968 & QSI 004 using 4130 welding rod Identify as D2968-041
 Batch: M102226

D / FC 07/02/26 (40)

4.0 QC9 VISUAL WELDING INSPECTION



Comment: VISUAL WELDING INSPECTION

FC 07/02/26 (40)

5.0 QC5 INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

FC 07/02/26 (40)

6.0 PG PURCHASING



Comment: PURCHASING

Issue P/O: 3197
 Description: D2968-041 to heat treat to ultimate tensile strength
 125ksi as per Dwg D2968
 Conformity sheet required

C267102127

(40)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: Date: 07/06/05
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 1/16/2007 11:28:27 AM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: TOW RING

Job Number: 30274

Part Number: D2968041

Job Number:



Seq. #:

Machine Or Operation:

Description :

Issue P/O: 3198

Cad Plate per QQ-P-416F Class I Type II

Conformity sheet required

CLO 102127

40

7.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure certificate of conformity is attached

6/5/17 (38)
6/3/19 40

8.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT CAD PLATE

38 parts
JAN 29 38
07-01-12 40

9.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.2) as per QSI 005 4.3

DO NOT POWDER COAT THREADS

BL 07-06-04

40

10.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT

PO M-L 07/06/04

40X

11.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: SF 462

7/6/5 SC

38

12.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

07/06/05

38

Job Completion




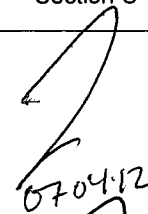

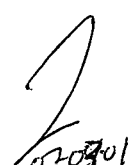

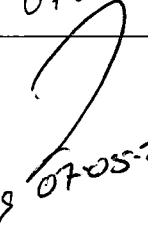


W 07/06/05

Dart Aerospace Ltd

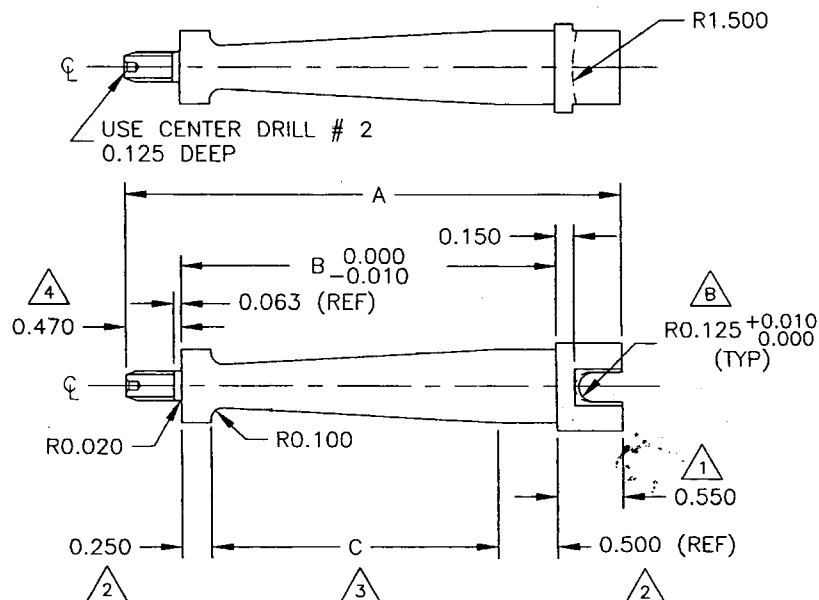
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
07-03-19	8.0	Card is easily chipped off.	 QS1042	Send back to supplier. See NCR 145	CS 07/04/12	 07-04-12	 QS1042	 07-04-19
07-05-29	8.0	Qty 2 missing from 40. Reason unknown, from supplier, or Dart.	 QS1042	All parts are to be physically counted prior to, and at the filling out of P/O's, to ensure Qty is correct. Also open receiving.	CS 07/05/29 07/2/29	 07-05-29	 QS1042	 07-05-29

NOTE: Date & initial all entries



PART NUMBER	A	B	C
D2968-1	5.040	4.020	3.270
D2968-3	4.200	3.180	2.430

D2968-1/-3 STEM

D2968-1 AND D2968-3 STEM:

MATERIAL: AISI 4130

△ Ø0.750 O.D.

△ Ø0.625 O.D.

△ MACHINE UNIFORM TAPER FROM Ø0.363 O.D. TO Ø0.625 O.D.

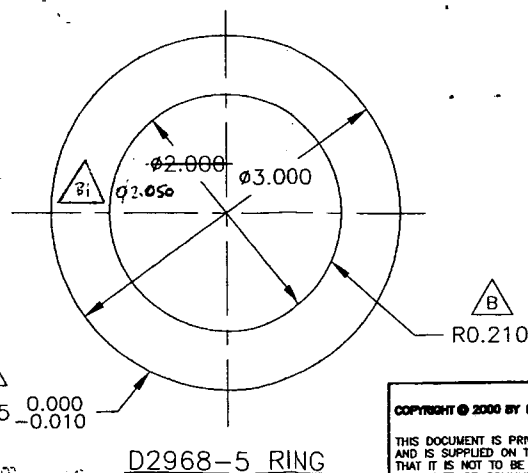
△ 1/4-28 UNF THREAD WITH 0.063 GRIP
MACHINE ALL INSIDE EDGES WITH A 0.010 RADIUS
UNLESS OTHERWISE INDICATED

TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

D2968-5 RING:

MATERIAL AISI 4130

TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED



D2968-5 RING

1/8

RELEASED

UNDER REVIEW

USE 2968-1 STEM
FOR -041
USE 2968-3 STEM
FOR -043

D2968-041 AND D2968-043 TOW RING:

WELD PER QSI 004 ON ALL EDGES BETWEEN STEM AND RING
HEAT TREAT TO MIN ULTIMATE TENSILE STRENGTH OF 125 KSI
FINISH: CAD PLATE ENTIRE ASSEMBLY PER

QQ-P-416F CLASS I TYPE II

POWDER COAT WHITE (REF 4.3.5.2) PER DART

QSI 005 4.3 (EXCEPT THREADS)

TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

B	00.05.31	R0.125 AND R0.210 WERE 0.060 x 45°
A	00.03.07	NEW ISSUE
DESIGN	✓	DRAWN BY
CHECKED	✓	APPROVED
DATE	00.05.31	TITLE
		TOW RING

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THAT IT IS NOT TO BE USED FOR ANY PURPOSE
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PERSON WITHOUT WRITTEN PERMISSION FROM
DART AEROSPACE LTD.

DART DART AEROSPACE LTD.
HAMPSHIRE, ENGLAND, CANADA

DRAWING NO. D2968 REV. B
SHEET 1 OF 1

SCALE
1:1

NO. 30274
WORK ORDER
SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE



VAC AERO
INTERNATIONAL INC.

PACKING SLIP

OAK 84812-1

☒ **HEAD OFFICE**
1371 SPEERS ROAD, OAKVILLE, ONTARIO
CANADA L6L 2X5
TEL: (905) 827-4171 FAX: (905) 827-7489

☐ **QUÉBEC DIVISION**
7450 RUE VÉRITÉ STREET, ST. LAURENT, QUÉBEC
CANADA H4S 1C5
TEL: (514) 334-4240 FAX: (514) 334-6269

GST No.: R105468102

03/07/2007

MM / DD / YYYY

PAGE: 1

BILL TO: 1DAR01
DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY, ON

SHIP TO: MANCO DAMPLEX
4660 HICKMORE
ST-LAURENT, QC

K6A 1K7

H4T 1K7

DATE SHIPPED	SHIP VIA	F.O.B.
03/07/2007		ORIGIN
CUSTOMER P/O No.		TERMS
3197		COD

*Need Certs
for cad
plating.*

2070319

LN	PART NO		UOM	QTY ORDERED	QTY SHIPPED	B/O QTY
01	D2968-041	TOW RING	EA	40	40	0
	Process Specifications: 1 HEAT TREATED TO 125 KSI MIN. 100% HARDNESS TESTED PER ASTM E-18 MATERIAL: 4130 P/S# 59089					
02	MC	MINIMUM CHARGE		1	1	0

No claims for shortage in weight or count will be entertained, unless presented within 5 working days after receipt of materials by customer.



VACUUM BRAZING - HEAT TREATING - SPECIAL PROCESSING - FURNACE EQUIPMENT
TURBINE COMPONENT OVERHAUL - PLASMA AND OTHER COATINGS





VAC AERO

INTERNATIONAL INC.

RELEASE NOTE

GST No. : R105468102

OAK 84812-1



HEAD OFFICE

1371 SPEERS ROAD, OAKVILLE, ONTARIO
CANADA L6L 2X5
TEL: (905) 827-4171 FAX: (905) 827-7489



2009 WYECROFT ROAD, UNIT B

OAKVILLE, ONTARIO
CANADA L6L 6J4
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QUEBEC DIVISION

7450 RUE VÉRITÉ STREET, ST. LAURENT, QUÉBEC
CANADA H4S 1C5
TEL: (514) 334-4240 FAX: (514) 334-6269

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1270 ABERDEEN ST.
HAWKESBURY, ON

SHIP TO: MANCO DAMPLEX
4660 HICKMORE
ST-LAURENT, QC

K6A 1K7

H4T 1K7

DATE SHIPPED	SHIP VIA	F.O.B.
03/07/2007		ORIGIN
CUSTOMER P/O No.	JOB No.	TERMS
3197		COD

PART No.	DESCRIPTION	UOM	QTY ORD	QTY SHPD	TEST RESULTS
----------	-------------	-----	------------	-------------	--------------

D2968-041

TOW RING

EA

40

40

Process Specifications:

Procedure: 4047

HEAT TREATED TO 125 KSI MIN.

100% HARDNESS TESTED PER ASTM E-18

MATERIAL: 4130

P/S# 59089

100% HARDNESS TESTED

40 pcs.

27/28 HRC



I hereby certify that the material covered by this release note has been inspected and tested and conforms to all specifications relevant thereto in accordance with the conditions of the contract / or purchase order.

ON BEHALF OF VAC AERO INTERNATIONAL INC.

Sandra Seeman
Authorized Q.C. Inspector



VACUUM BRAZING · HEAT TREATING · SPECIAL PROCESSING · FURNACE EQUIPMENT
TURBINE COMPONENT OVERHAUL · PLASMA AND OTHER COATINGS



HEAT
TREATING

L Lacelle

From: Jason Murdoch [jmurdoch@dartaero.com]

Sent: March 19, 2007 4:26 PM

To: 'L Lacelle'

Cc: 'Chantale Lavoie'

Subject: tow rings D2698-041

The cad plating chips off of the parts. Can we get these redone on NCR 14⁵? I have the parts in quarantine on my desk.

jmurdoch@dartaero.com
Q.C. COORDINATOR

20/03/2007

MANCO
DOMPLEX

8895 Crescent 3
Anjou (Québec) H1J 1E6
Tél.: 514-355-7867
Fax: 514-355-8750

CERTIFICAT DE CONFORMITÉ
CERTIFICATE OF COMPLIANCE

13184

Dart Aerospace LTD
Client / Customer

P03198
Votre # de commande / Your purchase order #

D2968-041B30574
de la pièce / part

104614
Notre # de bon de livraison / Our packing slip #

Inspecteur / Inspector	<u>Renault</u>	Date, équipe / Date, shift	<u>20 MARCH 2007</u>
Placage / Plating	<u>QQP 416 F CLASS / TYPE II</u>		
Quantité totale / Total quantity	<u>40</u>	Quantité inspectée / Inspected quantity	<u>40</u>
Adhésion / Adhesion	<u>Good</u>		
Épaisseur / Thickness	L.C.D.	H.C.D.	Moy. / aver. <u>0.0005</u>
Coussures, taches / Leach, spots	<u>NO</u>	Rugosité / Roughness	<u>NO</u>
Quantité approuvée / Approved quantity	<u>40</u>	Quantité rejetée / Rejected quantity	

Commentaires / Comments

see next 2 → NCR 145

Nous certifions que les pièces énumérées ci-dessus ont été faites en conformité avec vos dessins et spécifications et rencontrent les exigences contenues dans ces dessins et/ou spécifications.

We hereby certify that the parts listed above have been made in accordance with your drawings and specifications and are correct to the requirements contained in those drawings and/or specifications.

Signé au nom de
Signed on behalf of

MANCO
DOMPLEX

MANCO DOMPLEX

8895 Crescent 3
Anjou (Québec) H1J 1G6
Tél.: 514-355-7867
Fax: 514-355-8750

CERTIFICAT DE CONFORMITÉ CERTIFICATE OF COMPLIANCE

#13223

Client / Customer *DART AeroSpace*
Votre # de commande / Your purchase order # *PO3198*

de la pièce / part # *02968-04 1B30274*
Notre # de bon de livraison / Our packing slip # *104614*

Inspecteur / Inspector <i>Renard</i>	Date, équipe / Date, shift <i>15 MAR 2007</i>
Placage / Plating <i>Rueter QOF 416 F Yellow cadmium CCI 71/617</i>	
Quantité totale / Total quantity <i>40</i>	Quantité inspectée / Inspected quantity <i>40</i>
Adhésion / Adhesion <i>Good</i>	
Épaisseur / Thickness L.C.D.	H.C.D. Moy. / aver. <i>0.0005</i>
Coussures, taches / Leach spots <i>NO</i>	Rugosité / Roughness <i>NO</i>
Quantité approuvée / Approved quantity <i>40</i>	Quantité rejetée / Rejected quantity <i>—</i>

Commentaires / Comments

*I see
NCR 146
NO GOOD*

Nous certifions que les pièces énumérées ci-dessus ont été faites en conformité avec vos dessins et spécifications et rencontrent les exigences contenues dans ces dessins et/ou spécifications.

We hereby certify that the parts listed above have been made in accordance with your drawings and specifications and are correct to the requirements contained in those drawings and/or specifications.

Signé au nom de
Signed on behalf of

**MANCO
DOMPLEX**

MANCO DOMPLEX

8895 Crescent 3
Anjou (Québec) H1J 1B6
Tél.: 514-355-7867
Fax: 514-355-8750

CERTIFICAT DE CONFORMITÉ CERTIFICATE OF COMPLIANCE

13273

DART Aerospace LTD
Client / Customer

1 Lot of Tow Rings
de la pièce / part

Votre # de commande / Your purchase order #

103911
Notre # de bon de livraison / Our packing slip #

Inspecteur / Inspector	<u>Renault</u>	Date, équipe / Date, shift	<u>MAY 14, 2007</u>
Placage / Plating	<u>AQP-416 F CLASS 1 FIRE FF (Rework)</u>		
Quantité totale / Total quantity	<u>1 Lot</u>	Quantité inspectée / Inspected quantity	<u>1 Lot</u>
Adhésion / Adhesion	<u>Bonne</u>		
Épaisseur / Thickness	L.C.D.	H.C.D.	Moy. / aver. <u>0.0005</u>
Coulisses, taches / Leach, spots	<u>Non</u>	Rugosité / Roughness	<u>Non</u>
Quantité approuvée / Approved quantity	<u>1 Lot</u>	Quantité rejetée / Rejected quantity	

Commentaires / Comments

Nous certifions que les pièces énumérées ci-dessus ont été faites en conformité avec vos dessins et spécifications et rencontrent les exigences contenues dans ces dessins et/ou spécifications.

We hereby certify that the parts listed above have been made in accordance with your drawings and specifications and are correct to the requirements contained in those drawings and/or specifications.

Signé au nom de
Signed on behalf of

**MANCO
DOMPLEX**